

WHAT IS CLAIMED IS:

1. A flame retardant molding composition substantially free of halogen, phosphorus, and antimony, comprising:
 - an epoxy resin;
 - melamine cyanurate; and
 - a transition metal oxide containing an oxyanion of a Group VIA element.
2. The molding composition of claim 1, wherein the transition metal oxide is tungsten oxide.
3. The molding composition of claim 1, wherein the tungsten oxide is tungsten trioxide.
4. The molding composition of claim 1, further comprising a phenolic novolac hardener.
5. The molding composition of claim 4, wherein the amount of the phenolic novolac hardener ranges from about 1.5 weight % to about 10 weight % based on the total weight of the molding composition.
6. The molding composition of claim 1, wherein the epoxy resin comprises an epoxy cresol novolac resin.
7. The molding composition of claim 6, wherein the epoxy resin comprises a biphenyl epoxy resin.
8. The molding composition of claim 1, wherein the melamine cyanurate is present in an amount of from about 0.1 to about 3.5 percent by weight of the molding composition and the transition metal oxide is present in an amount from about 0.1 to about 2 percent by weight of the molding composition.

9. The molding composition of claim 1, wherein the amount of the epoxy resin ranges from about 4 weight % to about 12 weight % based on the total weight of the molding composition.

10. The molding composition of claim 9, wherein the amount of the epoxy resin ranges from about 5.5% weight % to about 8.5 weight % based on the total weight of the molding composition.

11. The molding composition of claim 1, further comprising a bulk amount of a filler material.

12. A flame-retardant molding composition substantially free of elemental halogen, phosphorous, and antimony, comprising:

about 4 weight % to about 12 weight %, based on the total weight of the composition of an epoxy resin;

about 0.1 weight % to about 3.5 weight %, based on the total weight of the composition of melamine cyanurate;

about 0.1 weight % to about 2 weight %, based on the total weight of the composition of tungsten trioxide;

about 0.001 weight % to about 10 weight %, based on the total weight of the composition of a phenolic hardener; and

about 10 weight % to about 85 weight %, based on the total weight of the composition of a filler material.

13. The molding composition of claim 12, further comprising from about 0.1 weight % to about 10 weight %, based on the total weight of the composition, of one or more additives selected from the group consisting of colorants, mold release agents, coupling agents, catalysts, ion scavengers, metal oxides, metal hydroxides, pigments, adhesion promoters, toughening agents, UV absorbers, and antioxidants.

14. The molding composition of claim 12, wherein the epoxy resin comprises an epoxy cresol novolac resin.

15. The molding composition of claim 14, wherein the epoxy resin comprises a biphenyl epoxy resin.

16. A method of coating an electrical or electronic device, comprising providing a molding composition comprising an epoxy resin, a melamine cyanurate, and a transition metal oxide containing an oxyanion of a Group VIA element contacting a surface of the device with the molding composition and heating the molding composition to a temperature sufficient to cure the molding composition and form a polymer on a surface of the device.

17. The method of claim 16, wherein the cure temperature ranges from about 165°C to about 195°C.

18. The method of claim 16, wherein the device is a semiconductor, a transistor, a diode, or an integrated circuit.

19. An electrical or electronic device formed by the method of claim 16.

20. The method of claim 16, wherein the transition metal oxide is tungsten trioxide.

21. The method of claim 16, wherein the molding composition further comprises a phenolic novolac hardener.

22. The method of claim 16, wherein the melamine cyanurate is present in an amount of from about 0.1 to about 3.5 percent by weight of the molding composition and the transition metal oxide is present in an amount from about 0.1 to about 2 percent by weight of the molding composition.

23. A method of imparting flame retardance to an epoxy molding composition comprising combining the epoxy molding composition with melamine cyanurate and a transition metal oxide containing an oxyanion of a Group VIA element.

24. The method of claim 23, wherein the transition metal oxide is tungsten trioxide.